

Steps Taken by New-Indy to reduce Hydrogen Sulfide (H₂S) emissions

Since the issuance of the Section 303 Emergency Order New-Indy has taken the following steps to reduce H₂S emissions:

1. Reactivating the Steam Stripper

As part of the facility's change in production from bleached to unbleached paper products, New-Indy took their steam stripper offline and started to control their foul condensate entirely through biological treatment in the Aeration Stabilization Basin (ASB). On May 3rd, they brought the steam stripper back online and it has been operating nearly continuously since, although some foul condensate is still being hard piped to the ASB for biological treatment. Efforts are continuing to be made to refurbish the steam stripper to increase capacity to control the foul condensate. An initial performance test (IPT) for the steam stripper is to be submitted to EPA on 8/30/2021. Between 9/23 and 9/27 the stripper was shut down for cleaning and maintenance. During this time all foul condensate was being hard piped to the ASB. Two oxidation reduction potential (ORP) monitors were installed in the foul condensate hard pipe to monitor potential for H₂S formation. The ORP monitors will continue to operate for the time being.

2. Dredging of the ASB

The ASB was topped with a layer of solids leading to a breakdown of some surface aerators in the basin and creating an anaerobic environment. New-Indy is removing both the settled and floating solids in the ASB. These efforts would allow the reactivation of aerators and increase hydraulic retention time in pond. Additional volume will also be added to ASB by the bottom dredging. An additional dredging device was brought online in September of 2021.

3. Aerator repair in the ASB and aerator installation in Holding Pond No. 1

As of 8/20/2021, all 52 aerators in the ASB are operational after the removal of enough surface solids. In addition, two new aerators were installed at the inlet of Holding Pond No. 1. These aerators provide addition dissolved oxygen that will reduce potential H₂S formation from sulfate reducing bacteria. The permanent need for the two new aerators is still be investigated and their installation has been approved by South Carolina Department of Health and Environmental Control (SCDEHC) through 12/31/2021.

4. Mixer installation in ASB

New-Indy has approval from SCDEHC to install two Turbulators, high speed floating mixers, within cell 1 of the ASB as part of a pilot study. The study will evaluate the performance of the two mixers to help break up the floating fiber layer and improve mixing in the first part of the ASB in cell 1. The Turbulators have been ordered but due to supply chain shortages they have yet to arrive as of 10/4/2021.

5. Biological and Chemical analysis and monitoring of the ASB

New-Indy is sending ASB influent, ASB midpoint, and ASB outfall samples to a contractor weekly for an advanced chemical and microbiological analysis that evaluates biomass health and related parameters. These analyses will provide weekly trended data on parameters related to wastewater performance to determine effectiveness of the measures already listed. This contractor has also installed a SENTRY probe which will monitor biomass activity at the ASB Midpoint sample. SENTRY monitors biological

activity by measuring electron transfer as the resident ASB biomass metabolizes soluble organic compounds.

6. Equalization (EQ) Basin and Primary clarifier sludge handling improvements

The underflow of the primary clarifier is currently feeding into an EQ basin that has a significant accumulation of solids. The lack of settling volume in the EQ leads to solids that either bypass or overwhelm the primary clarifier to flow to the ASB and reduce the hydraulic retention time. In the short term this is being mitigated by dredging the EQ basin to remove solids and increase its volume. In the long term, the underflow of the primary clarifier will be pressed and removed from the wastewater treatment system. There is currently no timeline on the start of the pressing and removing of solids from the underflow. There is no timeline on reducing non-wastewater loads to the primary clarifier either.

7. Reducing organic and chemical losses to the sewer

Fiber losses to the sewer in production led to the accumulation of solids in the ASB. New-Indy is trying to rectify this by optimizing brown stock washing and digester performance in the pulping operation. These actions increase the chemical and organic solids recovery to the chemical recovery process, while simultaneously reducing losses to the process sewers (by way of reducing carryover to the papermaking operations).

8. Upfitting the Post-Aeration Tank

On June 9, 2021, New-Indy installed a flexible cover, blower, and carbon filtration system to capture emissions from the post-aeration tank and treat the off gasses through a carbon filtration system to reduce the H₂S concentration. As of 10/4/2021 New-Indy is set to install a larger carbon filtration system in the near future and is seeking out a more permeant cover for the post-aeration tank.

9. Chemical treatments in the Wastewater Steam

New-Indy has been using multiple types of chemical treatment strategies to reduce H₂S emissions from there wastewater steam. They are summarized below.

On April 19, 2021, New-Indy began adding ammonium calcium nitrate in the ASB to supplement oxygen as an electronic acceptor and reduce the formation of hydrogen sulfide. The mill stopped adding calcium nitrate to the ASB on June 30, 2021 because the need was eliminated after additional aerators came online and the addition of hydrogen peroxide and liquid oxygen proved successful.

On June 9, 2021, New-Indy began adding hydrogen peroxide and supplemental oxygen to the ASB inlet as part of a pilot study to provide supplemental dissolved oxygen until aerators can be returned to service.

As of 8/20/2021, New-Indy continues feeding ferric chloride to the influent to Holding Pond No. 1 and establishing a hydrogen peroxide system at the pond outlet structure to control sulfide generation and increase dissolved oxygen levels in the pond. Ferric chloride reacts with hydrogen sulfide to form insoluble iron sulfide, which precipitates and settles reducing the concentration of H₂S that can be released to the atmosphere.

As of 9/24/2021, New-Indy acquired approval to add ferric chloride into the two ASB dredge pipelines and other alternate locations.

10. On-site and offsite air monitoring

New-Indy continues to utilize onsite and offsite H₂S air monitors. H₂S data is being submitted to EPA daily. The onsite monitors are in the process of being wired to the grid for a more permanent setup. New-Indy has signaled that they are interested in keeping the monitors operating for the foreseeable future.